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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,713	12/05/2001	Ron H. Farkash	10964-049001	1221
26161	7590	03/23/2004	EXAMINER	
FISH & RICHARDSON PC 225 FRANKLIN ST BOSTON, MA 02110			MERCADO, JULIAN A	
			ART UNIT	PAPER NUMBER

1745

DATE MAILED: 03/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/004,713

Applicant(s)

FARKASH, RON H.

Examiner

Julian Mercado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsien et al. (U.S. Pat. 4,124,478) in view of Lee et al. (U.S. Pat. 5,543,240).

Regarding independent claims 1 and 11, Tsien et al. teaches an electrode plate [2] having a front surface and a back surface and a plurality of fluid delivery holes [8A-8F] and a plurality of fluid exhaust holes [10A-10F], the front surface having a plurality of open fluid distribution channels [16]. (col. 5 line 1-51, also applies to dependent claims 4, 8, 14 and 20) Five fluid delivery holes and five fluid exhaust holes are disclosed, thus, the number of fluid delivery holes and fluid exhaust holes are of equal number. (applies to dependent claims 2, 6, 12, 18) Five fluid delivery holes and five fluid exhaust holes are inclusive of the claimed two gas delivery holes and two gas exhaust holes. (applies to dependent claims 3, 7, 13, 19) The limitation drawn to a first portion of the gas distribution channels being connected at one end to a first one of the plurality of gas delivery holes and at another end to a first one of a plurality of gas exhaust holes is considered shown by Tsien et al. to the extent that this recitation does not preclude a distribution channel from being connected to other fluid exhaust holes. For example, in Tsien et al. the distribution channels of fluid delivery hole [8A] connects to the other end to a first one of

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a plurality of gas exhaust holes such as fluid exhaust hole [10A] as the fluid traverses central area [6] (which is part of the distribution channel network), while albeit also connecting to fluid exhaust holes [10B-10F]. (see Figure 1) The same interpretation is applied to the limitations drawn to a second portion of the gas distribution channels being connected at one end to a second one of the plurality of gas delivery holes and at another end to a second one of a plurality of gas exhaust holes, e.g. via fluid distribution channel [8B], through central area [6] and through fluid exhaust hole [10B]. Likewise, the limitation drawn to a third portion of the gas distribution channels being connected at one end to the second one of the plurality of gas delivery holes and at another end to a first one of a plurality of gas exhaust holes is shown in Tsien et al. via fluid distribution channel [8B], through central area [6] and out through fluid exhaust hole [10A]. In sum, the claimed connection of gas distribution channels are not mutually exclusive, especially in view of these channels being claimed as "open channels".

The same analysis is applied for dependent claim 5, which recites similar limitations as independent claim 1 but for a second plate. Tsien et al. teaches a second plate shown in Figure 3, "[a]dditionally, frame area 4 also contains a second set of supply orifices represented by the orifices designated as 12, and oppositely positioned drainage orifices represented by the orifices designated as 14. This second set of supply orifices 12 and drainage orifices 14 is located on a different, second predetermined portion of frame area 4". (col. 5 line 19-25)

As to the electrode as part of a fuel cell, Tsien et al. is considered to teach or at least suggest use thereof in a fuel cell, "the above described thin sheet apparatus may advantageously be used in electrochemical devices such as fuel cells", *inter alia*. (col. 2 line 59-62)

Tsien et al. does not explicitly teach the fluid as a gas. However, Lee et al. teaches that fuel cells use hydrogen and oxygen gases for the oxidation and reduction reactions, respectively. (col. 1 line 53-63) Thus, since Tsien et al. teaches or at least suggests use of the disclosed electrode as part of a fuel cell, the skilled artisan would find obvious that the fluids to be directed through the electrodes are of the gaseous type as these are the types of fluid to be used in a fuel cell, as shown by Lee et al.

Regarding dependent claims 9 and 10, Tsien et al. teaches that the front surface of the electrode faces an adjacent separator [40]. (Figure 4) While Tsien et al. does not explicitly teach the electrode as either the anode side or the cathode side of the plate, as discussed above Tsien et al. teaches or at least suggests use of the electrode in a fuel cell, and the skilled artisan would find it notoriously known that fuel cells employ anode and cathode electrode plates for the inherent redox reaction. Additionally, Lee et al. teaches an anode [2] and a cathode [3] of a fuel cell with a matrix or membrane [1]. (col. 1 line 48-58) Thus, the skilled artisan would find obvious to employ the electrode in Tsien et al. in a fuel cell so that it serves as either an anode or cathode thereof, motivation coming from Tsien et al. and from Lee et al. showing a configuration consistent therewith of a fuel cell anode and cathode adjacent a membrane separator.

Independent claim 11 is notably modeled after independent claim 1 while also further reciting a fuel cell system comprising a plurality of fuel cells stacked together. While Tsien et al. does not explicitly teach a fuel cell system comprising a plurality of fuel cells stacked together, as discussed above Tsien et al. teaches or at least suggests use of the electrode in a fuel cell. Lee et al. teaches a fuel cell system comprising a stack of a plurality of fuel cells. (Figure 4, col. 3 line 29-38) The skilled artisan would find obvious to employ Tsien et al.'s invention as part of a

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fuel cell stack, i.e. a stack of fuel cells in series, for reasons such as maximizing the total voltage potential of a plurality of fuel cells.

As to dependent claims 15 and 16, Tsien et al. does not explicitly teach gas delivery valves to open or close the gas delivery manifolds and gas exhaust manifolds, respectively. However, Lee et al. teaches valves [44] for opening or closing the gas delivery manifold. (col. 3 line 43-47) This teaching meets the limitation of dependent claim 15 as well as dependent claim 16, since in the latter embodiment the valve [44], also being upstream of the gas delivery exhaust manifold, would similarly function to remain open or close over the gas exhaust manifold. The skilled artisan would find obvious to employ a valve in the fuel cell stack for reasons such as allowing for isolation of a defective fuel cell block. (see Lee et al., col. 4 line 21-31)

With respect to dependent claim 17, Tsien et al. does not explicitly teach air delivery manifolds or air exhaust manifolds. However, Lee et al. teaches manifolds [41] and [47] which are connected to gas distribution channels [25]. (Figure 4, col. 3 line 32-38) The skilled artisan would find obvious to employ manifolds in the fuel cell stack for reasons such as integrating gas delivery and exhaust to and from the fuel cell stack, thereby simplifying and uniformizing gas distribution.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.




Patrick Ryan
Supervisory Patent Examiner
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